



## JAKE G. MAULE

Born: London, England; November 13<sup>th</sup>, 1972  
Citizenship: British  
Business address: Geophysical Laboratory, Carnegie Institution of Washington  
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### **Education and employment**

NASA Project Scientist, Lab-on-a-Chip Application Development Portable Test System (2005 – present)  
*Geophysical Lab, Carnegie Institution of Washington and NASA Marshall Space Flight Center*

Carnegie Postdoctoral Fellowship (2002-2004)  
*Geophysical Lab, Carnegie Institution of Washington*

National Space Biomedical Research Institute (NSBRI) Research Scientist (2000 –2002)  
*NASA Johnson Space Center, Houston*

Masters of Space Studies, *cum laude* (1998-1999)  
*International Space University, Strasbourg, France*

Ph.D. Molecular Immunology (1995-1998)  
*Imperial College School of Medicine, University of London, England*

Bachelor of Science (Honors) Biology (1992-1995)  
*Durham University, Durham, England*

### **Human space flight program experience**

- NASA Project Scientist for LOCAD PTS scientific payload, scheduled for launch on Space Shuttle STS-116 to the International Space Station (ISS)
- NASA Extreme Environment Mission Operations (NEEMO) Expedition 5; PI in 2003
- NASA Desert Research and Technology Study (RATS), Meteor Crater, Arizona; PI in 2005 and 2006
- Parabolic flights on NASA KC-135, DC-9 and ESA Airbus-300 aircraft (17 in total between 1997-2006); PI for research in human physiology and equipment check-outs

### **Field expeditions and awards**

- Arctic Mars Analog Svalbard Expedition (AMASE); 2004 and 2006
- NAI Expedition to Kamchatka; 2004 and Team Leader for 2006
- Special Scientific Achievement Award from NASA Space and Life Sciences Directorate (July 2003)

### **Skills and interests**

- Emergency Medical Technician (EMT): 100 hours experience in ambulance and ER, Ben Taub, Houston
- Private pilot with instrument-rating; 160 hours flight time
- NAUI Master Scuba Diver
- Accelerated Free Fall (AFF) skydiver; member of United States Parachute Association (USPA)
- Languages: English, Russian, French and Norwegian

### **References**

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|----------------------|---|--|
| • Wesley T. Huntress | (Director, GL, Carnegie Institution)        | <a href="mailto:w.huntress@gl.ciw.edu">w.huntress@gl.ciw.edu</a>         |
| • Sean C. Solomon    | (Director, DTM, Carnegie Institution)       | <a href="mailto:Solomon@dtm.ciw.edu">Solomon@dtm.ciw.edu</a>             |
| • Daniel C. Burbank  | (Astronaut, NASA Johnson Space Center)      | <a href="mailto:daniel.c.Burbank@nasa.gov">daniel.c.Burbank@nasa.gov</a> |
| • Andrew Steele      | (Staff scientist, GL, Carnegie Institution) | <a href="mailto:a.steele@gl.ciw.edu">a.steele@gl.ciw.edu</a>             |
| • Norman Wainwright  | (LOCAD PTS PI, Charles River Labs)          | <a href="mailto:nwainwri@mbl.edu">nwainwri@mbl.edu</a>                   |
| • Ginger Flores      | (LOCAD PTS Project Manager, NASA MSFC)      | <a href="mailto:ginger.n.flor@nasa.gov">ginger.n.flor@nasa.gov</a>       |

## Publications

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- **J. Maule**, A. Steele, D. Burbank, D. Eppler, J. Kosmo, A. Ross, N. Wainwright, A. Child, G. Flores, L. Monaco, D. Graziosi and K. Splawn (2006). “Rapid Biomonitoring of Rock and Spacesuit Surfaces During Simulated Surface EVA at Meteor Crater: Implications for Sampling Procedures on the Moon and Mars”. International Conference on Environmental Systems (ICES), Norfolk, VA (2006).
- J. A. Hall, R. T. Schelble, **J. Maule**, J. Toporski and A. Steele (2006). “The Potential for Viral Preservation in the Fossil Record”, accepted to Geobiology, 2006.
- R. Hazen, A. Steele, **J. Maule**, R. Martin and E. Vicenzi (2006). “Applications of microarray technology to the study of mineral-molecule interactions”. *Astrobiology*, Vol. 6, No. 1, p. 223, February 2006.
- V. Starke, **J. Maule**, L. Monaco, G. Flores, K. Kong, M. Mittmann, M. Goldberg, M. Yamamoto and A. Steele (2006). “Microarray design for microbial monitoring and space exploration”. *Astrobiology*, Vol. 6, No. 1, p. 205, February 2006.
- **J. Maule**, A. Steele, D. Burbank, D. Eppler, J. Kosmo, A. Ross, N. Wainwright, A. Child, G. Flores, L. Monaco, D. Graziosi and K. Splawn (2006). “Monitoring forward contamination during simulated surface extra-vehicular activity (EVA) at Meteor Crater, Arizona: Implications for human exploration of the moon and Mars”. *Astrobiology*, Vol. 6, No. 1, p. 275, February 2006.
- **J. Maule**, J. Toporski and A. Steele (2006). “How lively are volcanic hot spring environments? In situ field analysis in Kamchatka, Russia”. *Astrobiology*, Vol. 6, No. 1, p. 209, February 2006.
- R. Martin, **J. Maule**, L. Monaco, A. Jenkins, D. Prasher, N. Wainwright and A. Steele (2006). “Antibody microarrays for real-time monitoring of microbial environment and astronaut health”. *Astrobiology*, Vol. 6, No. 1, p. 211, February 2006.
- R. Martin, **J. Maule**, L. Monaco, G. Flores, D. Mayer, E. Gouldie and A. Steele (2006). “A hypothetical simple user interface (SUI) to provide non-experts with a translation of microarray data”. *Astrobiology*, Vol. 6, No. 1, p. 278, February 2006.
- **J. Maule**, N. Wainwright, A. Steele and J. Toporski (2006). “Detection of biomarkers in Mars simulant regolith using an antibody microarray”, in prep. To Planetary Space Science, 2006.
- **J. Maule**, J. Toporski, N. Wainwright and A. Steele (2005). “An integrated system for labeling and detection of biological molecules in Mars analog regolith with antibody microarray”. *36<sup>th</sup> Lunar and Planetary Science Conference, Houston, March 2005*.
- A. Steele, H. Amundsen, M. Fries, E. Vicenzi, L. Benning, **J. Maule**, B. Mysen, J. Toporski, M. Schweizer and M. Fogel (2005). “A morphological and chemical study of carbonate globules within mantle xenoliths of the Sverefjellet volcano, Spitsbergen”. *36<sup>th</sup> Lunar and Planetary Science Conference, Houston, March 2005*.
- **J. Maule**, R. Hazen and A. Steele (2005). “Use of microarray techniques to probe interactions between organic molecules and mineral surfaces”. *Astrobiology*, Vol. 5, No. 2, 2005, p. 224.
- **J. Maule**, M. Fogel and A. Steele (2005). “Detection of human and bone collagen in early holocene bone and teeth with antibody microarray”. *Astrobiology*, Vol. 5, No. 2, 2005, p. 289.
- **J. Maule**, J. Toporski and A. Steele (2005). “Labeling and detection of Mars analog regolith with antibody microarray”. *Astrobiology*, Vol. 5, No. 2, 2005, p. 289.
- **J. Maule**, J. Toporski and A. Steele (2005). “Antibody microarrays in the field to analyze gene expression at the protein level in Spitsbergen and Kamchatka”. *Astrobiology*, Vol. 5, No. 2, 2005, p. 290.
- **J. Maule** and A. Steele (2004). “Life Detection on a Chip”. Special Supplement Abstracts from the Astrobiology Science Conference 2004, NASA Ames, 28 March – 1April, 2004. International Journal of Astrobiology, March 2004.
- **J. Maule** and A. Steele (2004). “A prototype life detection chip”. *36<sup>th</sup> Lunar and Planetary Science Conference, Houston, March 2004*.

- **J. Maule**, M. Fogel, A. Steele, N. Wainwright, D. Pierson and D. McKay (2004). "Antigen-Antibody Interactions in Altered Gravity: Implications for Immunosorbent Assay during Space Flight". J. Gravitational Physiology, Volume 10, Issue 2, 2004.
- **J. Maule**, A. Steele, J. Toporski and D.S. McKay (2004). "A new antibody for category 1 biomarker detection". 35<sup>th</sup> Lunar and Planetary Science Conference, Houston, March 2003.
- **J. Maule**, A. Steele, J. Toporski, D. McKay (2002). "Detection of Reliable Biomarkers using Antibodies". NASA Astrobiology Institute General Meeting, Tempe, Arizona, February 2003
- **J. Maule** (2002). "Application of Microarray Technology for the Detection of Biological Molecules on Earth and in Space". Environmental Sentinels 2002 Symposium, Houston, Texas, September 17-18.
- A. Steele, **J. Maule**, J. Toporski, M. Schweitzer, R. Avci, H. Rowlands, S. Pincus, V. Parro-Garcia, C. Briones, R. Robertson, D. Mckay (2002). "Astrobiotechnology for Solar System Exploration". In situ Instrument Technologies Workshop, June 11-13, 2002, Pasadena, CA
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- **J. Maule**, A. Steele and D. Mckay (2002). "MASSE: using Microarrays to Detect Reliable Biomarkers". Bacterial Paleontology Conference, Moscow, May 2002.
- **J. Maule**, A. Steele, J. Toporski and D. Mckay (2002). "Application of Life Detection Techniques to Space Exploration". ESA Life Science Symposium, Stockholm, June 2002.
- **J. Maule**, Ed. (2000). "Telemedicine in the 21<sup>st</sup> Century: Opportunities for Citizens, Society and Industry". European Commission/ ISU Conference, 2000, Strasbourg, France
- E. Benzi, B. Boardman, T. Brisibe, R. Gao, L. Higgs, C. Maredza, **J. Maule**, P. Messina, R. Mittal, M. Rezadad (2000). "Utilization of the International Space Station: A User's Overview". International Space Station: The Next Space Marketplace, p. 271-355. Proceedings of International Symposium, 26-28 May 1999, Strasbourg, France edited by G. Haskell and M. Rycroft. Kluwer Academic Publishers.
- **J. Maule**, Editor, MSS4 Class (2000). "Open for Business; a new approach to commercialization of the International Space Station". Space Policy 16: 71-75.
- **J. Maule** (1999). "Characterisation and Modulation of the Immune Response following Direct Injection of Plasmid DNA into Murine Skeletal Muscle". Ph.D. Thesis, University of London.
- P. Vaïda, A. Capderou, O. Baillart, O. Atkov, C. Kays, I. Desormes, **J. Maule**, P. Techoueyres and J.L. Lachaud (1999). "Continuous Tridimensional Vectocardiography and Twelve Leads EKG in Humans During Parabolic Flights". European Low Gravity Association (ELGRA) News, 21, February 1999.
- **J. Maule** (2000). "Gene Therapy as a Countermeasure for Long Duration Space Flight". International Space Station: The Next Space Marketplace, p. 259-260. Proceedings of International Symposium, 26-28 May 1999, Strasbourg, France edited by G. Haskell and M. Rycroft. Kluwer Academic Publishers.
- **J. Maule** (1999). "Human Cardiovascular Physiology during Parabolic Flight". MSS Thesis, International Space University, France.
- D.J. Wells, **J. Maule**, et al. (1998). "Evaluation of plasmid DNA for in vivo gene therapy: factors affecting the number of transfected fibers." Journal of Pharmaceutical Science 87(6): 763-8.
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